REPLACEMENT SHEET

```
Imp-FAM18   LARLFSLKPLVLALGFCFGTHCAAADAVAAEETDNPTAGGSVRSVSEPIQPTSLSLGSTC  60
NMB0280     LARLFSLKPLVLALGLCFGTHCAAADAVAAEETDNPTAGESVRSVSEPIQPTSLSLGSTC  60
NMA2207     MARLFSLKPLVLALGFCFGTHCAAADAVAAEETDNPTAGGSVRSVSEPIQPTSLSLGSTC  60
            :************** :******************** *******************

Imp-FAM18   LFCSNESGSPERTEAAVRGSGEASIPEDYTRIVADKVEGQSQVQVRAEGNVVVERNRTTL  120
NMB0280     LFCSNESGSPERTEAAVQGSGEASIPEDYTRIVADRMEGQSQVQVRAEGNVVVERNRTTL  120
NMA2207     LFCSNESGSPERTEAAVQGSGEASIPEDYTRIVADRMEGQSQVQVRAEGNVVVERNRTTL  120
            ***************** :*****************  :********************

Imp-FAM18   NTDWADYDQSGDTVTAGDRFALQQDGTLIRGETLTYNLEQQTGEAHNVRMETEHGGRRLQ  180
NMB0280     NTDWADYDQSGDTVTAGDRFALQQDGTLIRGETLTYNLEQQTGEAHNVRMEIEQGGRRLQ  180
NMA2207     NADWADYDQSGDTVTAGDRFALQQDGTLIRGETLTYNLEQQTGEAHNVRMETEHGGRRLQ  180
            * :********************************************** *: ******

Imp-FAM18   SVSRTAEMLGEGHYKLTETQFNTCSAGDAGWYVKAASVEADREKGIGVAKHAAFVFGGVP  240
NMB0280     SVSRTAEMLGEGHYKLTETQFNTCSAGDAGWYVKAASVEADREKGIGVAKHAAFVFGGVP  240
NMA2207     SVSRTAEMLGEGHYKLTETQFNTCSAGDAGWYVKAASVEADREKGIGVAKHAAFVFGGVP  240
            ************************************************************

Imp-FAM18   IFYTPWADFPLDGNRKSGLLVPSLSAGSDGVSLSVPYYFNLAPNLDATFAPSVIGERGAV  300
NMB0280     IFYTPWADFPLDGNRKSGLLVPSLSAGSDGVSLSVPYYFNLAPNLDATFAPSVIGERGAV  300
NMA2207     IFYTPWADFPLDGNRKSGLLVPSLSAGSDGVSLSVPYYFNLAPNLDATFAPGVIGERGAV  300
            *************************************************** :*******

Imp-FAM18   FDGQVRYLRPDYAGQSDLTWLPHDKKSGRNNRYQAKWQHRHDISDTLQAGVDFNQVSDSG  360
NMB0280     FDGQVRYLRPDYAGQSDLTWLPHDKKSGRNNRYQAKWQHRHDISDTLQAGVDFNQVSDSG  360
NMA2207     FDGQVRYLRPDYAGQSDLTWLPHDKKSGRNNRYQAKWQHRHDISDTLQAGVDFNQVSDSG  360
            ************************************************************

Imp-FAM18   YYRDFYGNKEIAGNVNLNRRVWLDYGGRAAGGSLNAGLSVLKYQTLANQSGYKDKPYALM  420
NMB0280     YYRDFYGNKEIAGNVNLNRRVWLDYGGRAAGGSLNAGLSVLKYQTLANQSGYKDKPYALM  420
NMA2207     YYRDFYGNKEIAGNVNLNRRVWLDYGGRAAGGSLNAGLSVLKYQTLANQSGYKDKPYALM  420
            ************************************************************

Imp-FAM18   PRLSADWRKNTGRAQIGVSAQFTRFSHDSRQDGSRLVVYPDIKWDFSNSWGYVRPKLGLH  480
NMB0280     PRLSVEWRKNTGRAQIGVSAQFTRFSHDSRQDGSRLVVYPDIKWDFSNSWGYVRPKLGLH  480
NMA2207     PRLSADWRKNTGRAQIGVSAQFTRFSHDSRQDGSRLVVYPDIKWDFSNSWGYVRPKLGLH  480
            ****.:******************************************************

Imp-FAM18   ATYYSLNRFGSQEARRVSRTLPIVNIDSGATFERNTRMFGGGVLQTLEPRLFYNYIPAKS  540
NMB0280     ATYYSLNRFGSQEARRVSRTLPIVNIDSGATFERNTRMFGGEVLQTLEPRLFYNYIPAKS  540
NMA2207     ATYYSLNRFGSQEARRVSRTLPIVNIDSGMTFERNTRMFGGGVLQTLEPRLFYNYIPAKS  540
            *****************************  ********* *******************

Imp-FAM18   QNDLPNFDSSESSFGYGQLFRENLYYGNDRINTANSLSAAVQSRILDGATGEERFRAGIG  600
NMB0280     QNDLPNFDSSESSFGYGQLFRENLYYGNDRINTANSLSAAVQSRILDGATGEERFRAGIG  600
NMA2207     QNDLPNFDSSESSFGYGQLFRENLYYGNDRINTANSLSAAVQSRILDGATGEERFRAGIG  600
            ************************************************************

Imp-FAM18   QKFYFKDDAVMLDGSVGKKPRNRSDWVAFASGSIGSRFILDSSIHYNQNDKRAENYAVGA  660
NMB0280     QKFYFKDDAVMLDGSVGKKPRNRSDWVAFASGSIGSRFILDSSIHYNQNDKRAENYAVGA  660
NMA2207     QKFYFKNDAVMLDGSVGKKPRSRSDWVAFASGSIGSRFILDSSIHYNQNDKRAENYAVGA  660
            ******:************** ********..****************************

Imp-FAM18   SYRPAQGKVLNARYKYGRNEKIYLKSDGSYFYDKLSQLDLSAQWPLTRNLSAVVRYNYGF  720
NMB0280     SYRPAQGKVLNARYKYGRNEKIYLKSDGSYFYDKLSQLDLSAQWPLTRNLSAVVRYNYGF  720
NMA2207     SYRPAQGKVLNARYKYGRNEKIYLKSDGSYFYDKLSQLDLSAQWPLTRNLSAVVRYNYGF  720
            ************************************************************

Imp-FAM18   EAKKPIEMLAGAEYKSSCGCWGAGVYAQRYVTGENTYKNAVFFSLQLKDLSSVGRNPADR  780
NMB0280     EAKKPIEVLAGAEYKSSCGCWGAGVYAQRYVTGENTYKNAVFFSLQLKDLSSVGRNPADR  780
NMA2207     EAKKPIEVLAGAEYKSSCGCWGAGVYAQRYVTGENTYKNAVFFSLQLKDLSSVGRNPADR  780
            *******:****************************************************

Imp-FAM18   MDVAVPGYIPAHSLSAGRNKRP  802    (SEQ ID NO: 27)
NMB0280     MDVAVPGYITAHSLSAGRNKRP  802    (SEQ ID NO: 28)
NMA2207     MDVAVPGYIPAHSLSAGRNKRP  802    (SEQ ID NO: 29)
            *********.************
```

Figure 8

REPLACEMENT SHEET

A (SEQ ID NO: 2)

MIEKLTFGLFKKEDARSFMRLMAYVRPYKIRIVAALIAIFGVAATESYLAAFIAPLINHG
FSAPAAPPELSAAAGIISTLQNWREQFTYMVWGTENKIWTVPLFLIILVVIRGICRFTST
YLMTWVSVMTISKIRKDMFAKMLTLSSRYHQETPSGTVLMNMLNLTEQSVSNASDIFTVL
TRDTMIVTGLTIVLLYLNWQLSLIVVLMFPLLSLLSRYYRDRLKHVISDSQKSIGTMNNV
IAETHQGHRVVKLFNGQAQAANRFDAVNRTIVRLSKKITQATAAHSPFSELIASIALAVV
IFIALWQSQNGYTTIGEFMAFIVAMLQMYAPIKSLANISIPMQTMFLAADGVCAFLDTPP
EQDKGTLAPQRVEGRISFRNVDVEYRSDGIKALDNFNLDIRQGERVALVGRSGSGKSTVV
NLLPRFVEPSAGNICIDGIDIADIKLDCLRAQFALVSQDVFLFDDTLFENVRYSRPDAGE
AEVLFALQTANLQSLIDSSPLGLHQPIGSNGSNLSGGQRQRVAIARAILKDAPILLLDEA
TSALDNESERLVQQALERLMENRTGIIVAHRLTTIEGADRIIVMDDGKIIEQGTHEQLMS
QNGYYTMLRNISNKDAAVRTA

B (SEQ ID NO: 4)

MLAWRPGRPDGCQAAGGRRYNPGHDCIKASVSLNSAARNAPAGSQPVKAELWKRVYSRVGSYWKGLVLA
VLLMAGAAATQ
PTLAVIMKPLLDDGFSGAKPHYVWFLPLAVVGLILLRGICNFFSDYLLAWVANNVLRGIRGEMFERLLG
LPDADFKRGDT
GRLLNRFTIDAGNVTGYATDVITVLVRETLVVIALIGVLLYMSWALTLIILVMLPVSVGIARAFTRRLR
RINRETVNMNA
ELTRVVSEGIDGQRVIKLFDGYDAERRRFDFVNSRLRRFAMRSATADAALTPLTQVCISVAVGAVIAVA
LSQANSGALTV
GSFASFMAALAQIFDPIKRLTNLAGKMQKMLVAAESVFTLVDQTPEADAGTRALPEPVRGKVEFRAVSH
RFPDADRDTVS
AVSFLVEPGQTVALVGRSGSGKTTLVNMLPRFVLPDGGDILFDDVPIQDLTLRSLRSHLSLVSQDVVLF
DDTIAANVGYG
AGGTVDDARVRDALAAANLLEFVDGLPLGIHTPVGQNAARLSGGQRQRLAIARALIKNAPVLILDEATS
ALDNESERQVQ
ASLERLMRGRTTLVIAHRLSTVQNADRIIVLDAGKIVEHGPHSELLAANGLYASLYNMQFRED

Figure 14

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REPLACEMENT SHEET

(SEQ ID NO: 3)

```
atgatagaaaaactgactttcggactgtttaaaaaagaagacgcgcgcagctttatgcgc
ctgatggcgtacgtccgcccctacaaaatccgcatcgttgccgccctgattgccattttc
ggcgttgccgccaccgaaagctaccttgccgccttcatcgcccccctgattaaccacggc
ttttccgcacctgccgcgccgcccgagctgtctgccgccgccggcatcatttccaccctg
caaaactggcgcgaacagtttacctatatggtttgggggacggaaaacaaaatctggacc
gtcccgctcttcctcatcatcctcgtcgtcatccgtggcatctgccgctttaccagcacc
tatctgatgacttgggtctccgtgatgaccatcagcaaaatccgcaaagatatgtttgcc
aaaatgctgacccttcctcccgctaccatcaggaaacgccgtccggcaccgtactgatg
aatatgctcaacctgaccgaacagtcggtcagcaacgccagcgacatcttcaccgtcctc
acgcgcgacacgatgatcgttaccggcctgaccatcgtcctgctttacctcaactggcag
ctcagcctcatcgtcgtcctgatgttccccctgctctccctgctctcgcgctactaccgc
gaccgtctgaaacacgtcatttccgactcgcaaaaaagcataggcacgatgaacaacgtg
attgccgaaacccatcagggacaccgcgtcgtcaagctgttcaacgggcaggcgcaggcg
gcaaaccggttcgacgcggtcaaccgcaccatcgtccgcctcagcaaaaaaatcacgcag
gcaacggcggcacattccccgttcagcgaactgatcgcctcgatcgccctcgccgtcgtc
atcttcatcgccctgtggcaaagccaaaacggctacaccaccatcggcgaatttatggca
ttcatcgtcgcgatgctgcaaatgtacgcccccatcaaaagccttgccaacatcagcatc
cctatgcagacgatgttcctcgccgccgacggtgtatgtgcatttctcgacaccccgccc
gaacaggacaagggcacgctcgcaccgcagcgtgtcgaagggcgcatcagcttccgcaac
gtcgatgtcgaataccgttcagacggcatcaaagccctcgacaacttcaacctcgacatc
agacaaggcgaacgcgtcgccctggtcggacgttccggcagcggcaaatccaccgtcgtc
aacctgctgccccgctttgtcgaaccgtctgccggcaacatctgcatagacggtatcgac
atcgccgacatcaaactcgactgcctgcgcgcccaattcgccctcgtctcccaagacgta
ttcctgtttgacgacacccctgtttgaaaacgtccgatacagccgtcccgacgcgggcgaa
gccgaagtcctgttcgccctccaaaccgccaacctgcaaagcctgattgacagctccccg
ctcggactgcaccagcccatcggatcgaacggcagcaacttatccggcggacagcggcaa
cgcgtcgccattgcccgcgccattttgaaagacgcgccgatattattattggacgaagcc
accagcgcattagacaacgaatccgaacgcctcgtccaacaggcgctcgaacgcctgatg
gaaaaccgcaccggcatcatcgtcgcccaccgcctgaccaccatcgaaggggccgaccgc
atcatcgtgatggacgacggcaaaatcatcgaacaaggcacacacgaacaactgatgtcc
caaaacggttactacacgatgttacgcaatatctcaaacaaagatgccgccgtccggacg
gcataa
```

Figure 15 A

VACCINE
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REPLACEMENT SHEET

(SEQ ID NO: 5)

```
atgctggcgtggcggccgggtcggccggacggttgtcaggcggcgggtggccgacggtacaatcccggg
cacgattgtat
taaagcgagtgtttccttgaattctgccgcacgcaatgcgcccgccggctcccagccggtcaaggccga
actctggaagc
gggtctacagccgcgtaggctcttactggaaggggctggtgctggccgtcctgctgatggccggcgccg
ccgcgacccag
cccacgctggcagtcatcatgaagccgctgctcgacgatggcttctcgggcgccaagccgcattatgtc
tggttcctgcc
gctggcggtggtggggctgatcctgctgcgcggaatctgcaatttcttcagcgactacctgctggcctg
ggtggccaaca
acgtgctgcgcggcatccggggcgagatgttcgagcggctgctgggcctgcccgatgccgacttcaagc
gcggcgacacc
ggccgcctgctcaaccgcttcaccatcgacgcgggcaacgtcaccggctacgccaccgacgtcatcacg
gtgctggtgcg
cgaaaccctggtcgtcatcgccctgatcggcgtgctgctgtacatgtcgtgggcgctgacgctgatcat
cctcgtcatgc
tgccggtgtcggtgggcatcgcccgcgccttcacgcgccggctgcgccgcatcaaccgcgaaaccgtca
acatgaacgcc
gagctcacccgcgtggtcagcgagggcatcgacgggcagcgtgtcatcaagctgttcgacggctatgac
gccgagcgccg
ccgtttcgacttcgtcaactcgcgcctgcgccgcttcgcgatgcgcagcgccaccgccgacgcggcgct
cacgccgctca
cgcaggtgtgcatctcggtcgccgtgggcgcggtcatcgccgtggccctcagccaggccaacagcggcg
cgctcaccgtc
ggcagcttcgcctcgttcatggccgcgctggcgcagatcttcgatccgatcaagcgcctgaccaacctg
gccggcaaaat
gcagaaaatgctggtggccgccgaaagcgtgttcaccctggtggaccagacgcccgaggccgacgccgg
cacgcgcgcct
tgcccgaaccggtgcgcggcaaggtcgaattccgtgcggtcagccatcgcttcccggacgccgatcgcg
ataccgtcagc
gccgtgtcgttcctggtcgagccgggccagaccgtggccctggtcggacgctcgggcagcggcaagacc
actctggtcaa
catgctgccgcgctttgtcctgcccgatggcggcgacatcctgttcgacgatgtgcccatccaggatct
caccttgcgca
gcctgcgctcgcatctgtcgctggtcagccaggacgtggtgctgttcgacgacaccattgccgccaacg
tgggttatggc
gccggcggcaccgtcgacgacgcgcgcgttcgcgacgcgctggccgcggccaacctgctggagttcgtc
gacggcttgcc
gctgggcatccacacgccggtgggccagaatgccgcccgcctgtcgggcggccagcgccagcgcctggc
gatcgcccgcg
ccctgatcaagaacgcgccggtcctgatcctcgacgaggcgacctcggcgctggacaacgaatccgagc
gccaggtgcag
gcatcgctggagcggctgatgcgcgggcgcaccacgctggtcatcgcccaccggctgtccaccgtgcag
aacgccgaccg
catcatcgtgctggacgccggcaagatcgtcgagcacgggccgcacagcgagctgttggccgccaacgg
cctgtacgcct
cgctctacaacatgcagttccgcgaggactga
```

Figure 15 B